

FIG. 1

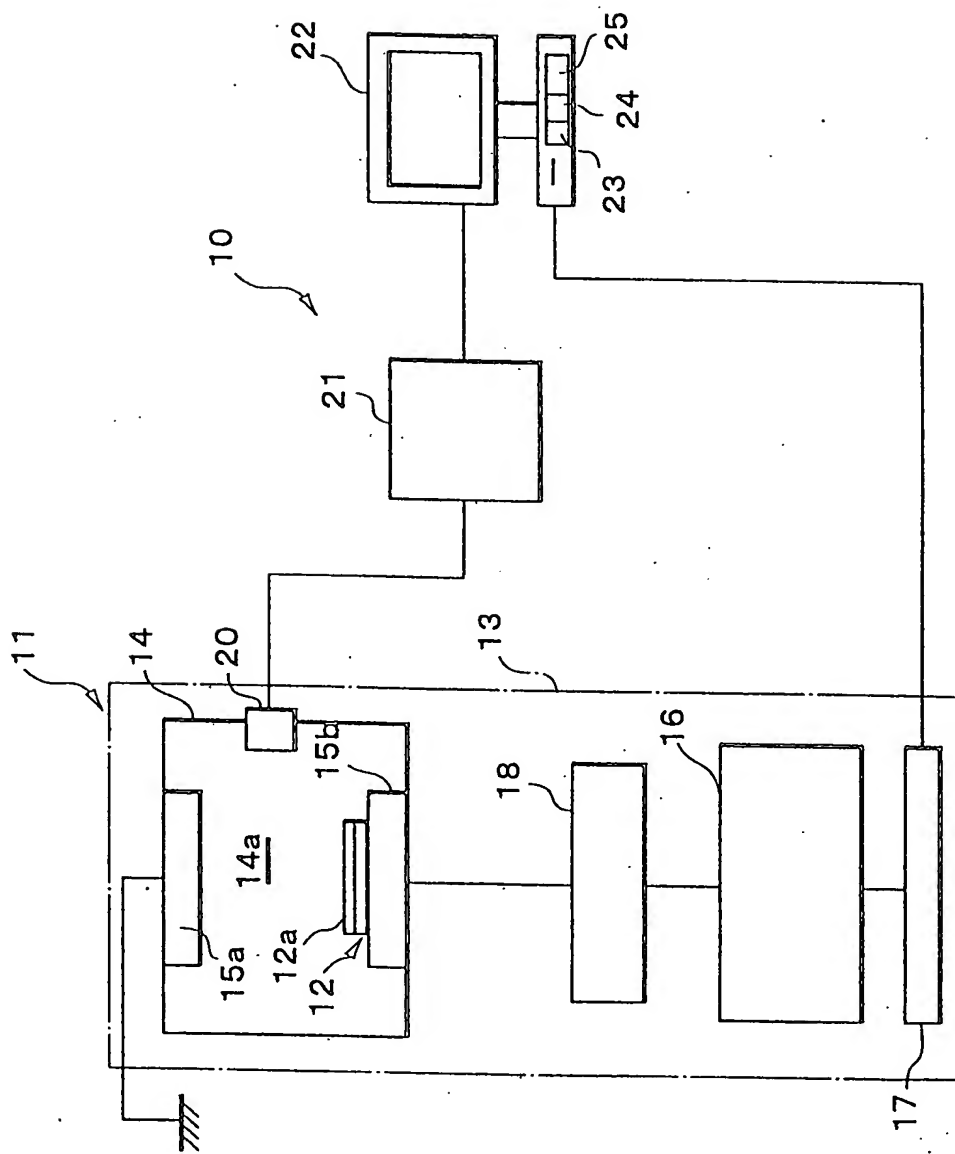


FIG. 2

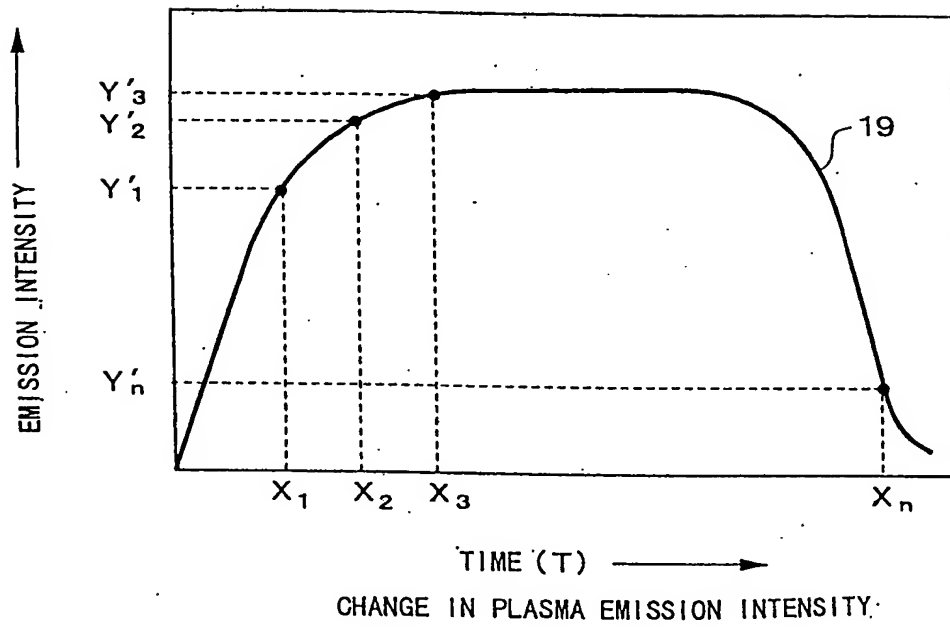


FIG. 3

N	Y'_1	Y'_2	....	Y'_n
1	$y'_{1 \cdot 1}$	$y'_{2 \cdot 1}$	....	$y'_{n \cdot 1}$
2	$y'_{1 \cdot 2}$	$y'_{2 \cdot 2}$	....	$y'_{n \cdot 2}$
\vdots	\vdots	\vdots	\vdots	\vdots
m	$y'_{1 \cdot m}$	$y'_{2 \cdot m}$	....	$y'_{n \cdot m}$

(a) MEASURED DATA



N	Y_1	Y_2	....	Y_n
1	$y_{1 \cdot 1}$	$y_{2 \cdot 1}$	....	$y_{n \cdot 1}$
2	$y_{1 \cdot 2}$	$y_{2 \cdot 2}$	....	$y_{n \cdot 2}$
\vdots	\vdots	\vdots	\vdots	\vdots
m	$y_{1 \cdot m}$	$y_{2 \cdot m}$	....	$y_{n \cdot m}$

(b) STANDARDIZED DATA

STANDARDIZATION OF DATA

FIG. 4

$$R = \begin{bmatrix} 1 & r_{1 \cdot 2} & \dots & r_{1 \cdot n} \\ r_{2 \cdot 1} & 1 & \dots & r_{2 \cdot n} \\ \vdots & \vdots & \dots & \vdots \\ r_{n \cdot 1} & r_{n \cdot 2} & \dots & 1 \end{bmatrix}$$

WHEREIN,

$$r_{i \cdot j} = r_{j \cdot i} = \frac{1}{m} \sum_{p=1}^m y_{i \cdot p} y_{j \cdot p} \dots (2)$$

(a) CORRELATION MATRIX $R(i, j=1 \sim n)$

$$A = R^{-1} = \begin{bmatrix} a_{1 \cdot 1} & a_{1 \cdot 2} & \dots & a_{1 \cdot n} \\ a_{2 \cdot 1} & a_{2 \cdot 2} & \dots & a_{2 \cdot n} \\ \vdots & \vdots & \dots & \vdots \\ a_{n \cdot 1} & a_{n \cdot 2} & \dots & a_{n \cdot n} \end{bmatrix}$$

(b) INVERSE MATRIX OF CORRELATION MATRIX $R(i, j=1 \sim n)$

$$D^2 = \frac{1}{n} \sum_{i=1}^n \sum_{j=1}^n a_{i \cdot j} y_i y_j \dots (3)$$

(c) MAHALANOBIS (SQUARED) DISTANCE D^2

DATA PROCESSING

FIG. 5

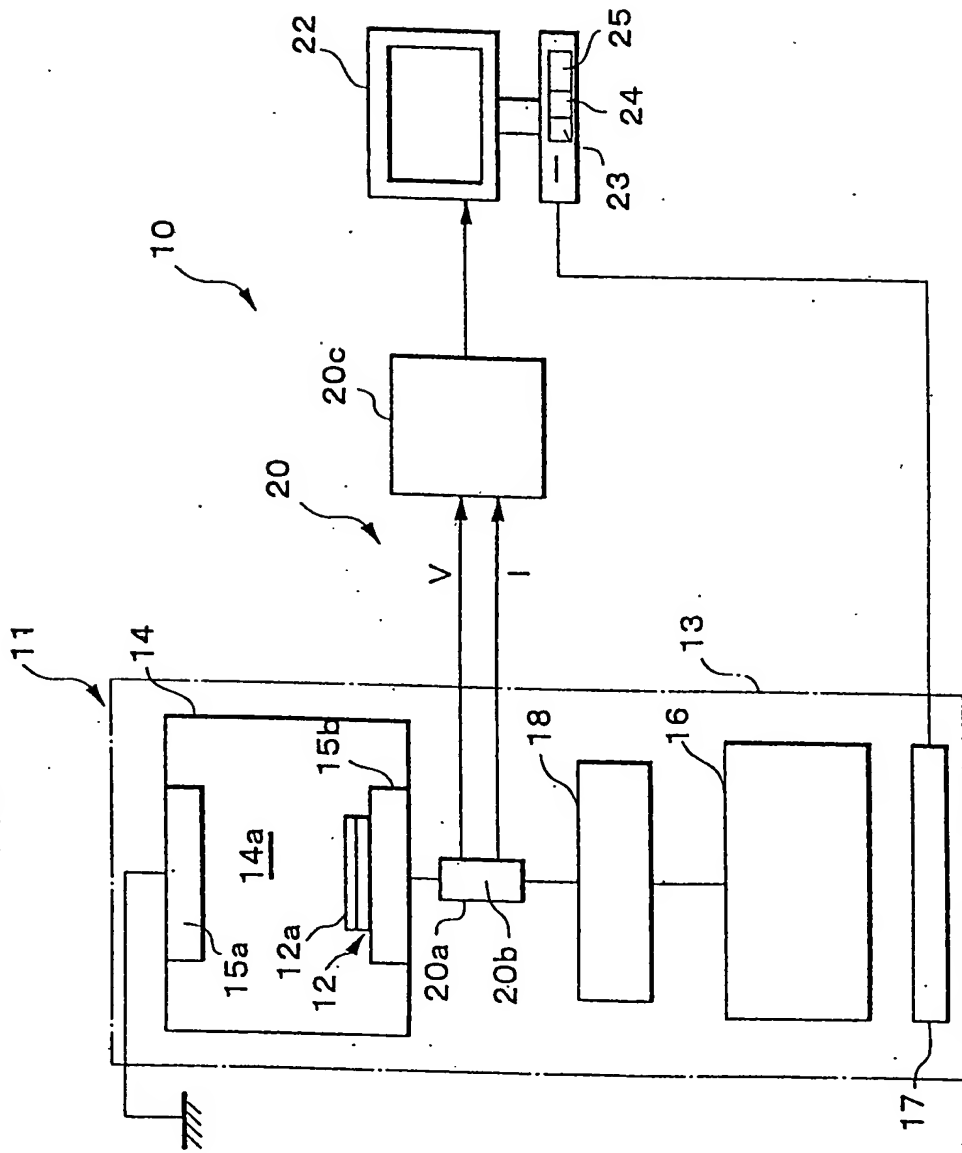
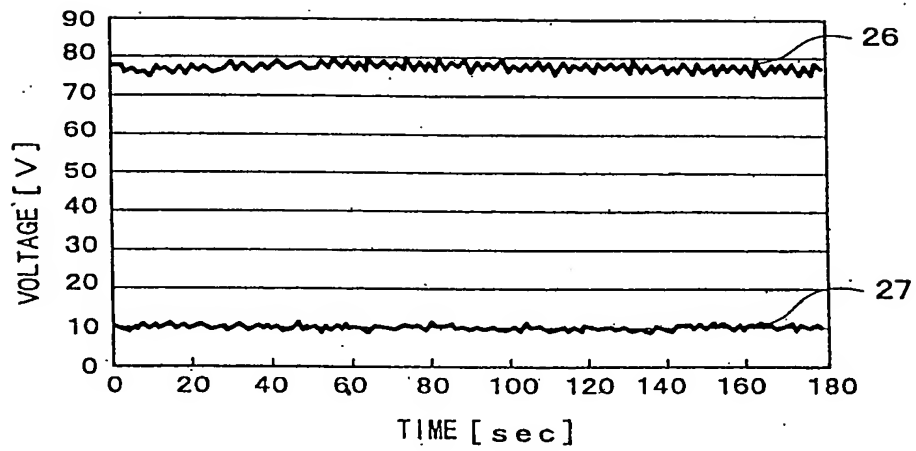


FIG. 6

	Time. 1	Time. 2	Time. 3	..... n
	IO, ., VO, ., θ	IO, ., VO, ., θ	IO, ., VO, ., θ	..... θ
1	X1,, X11	X12,, X22	X23,, X33	..... Xnn
2	Y1,, Y11	Y12,, Y22	Y23,, Y33	..... Ynn

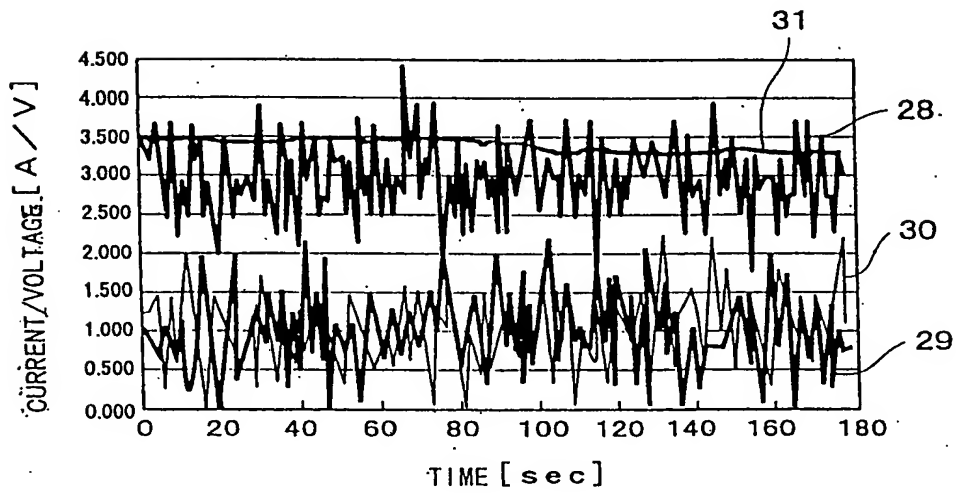
STANDARDIZED DATA IN SECOND EMBODIMENT

FIG. 7



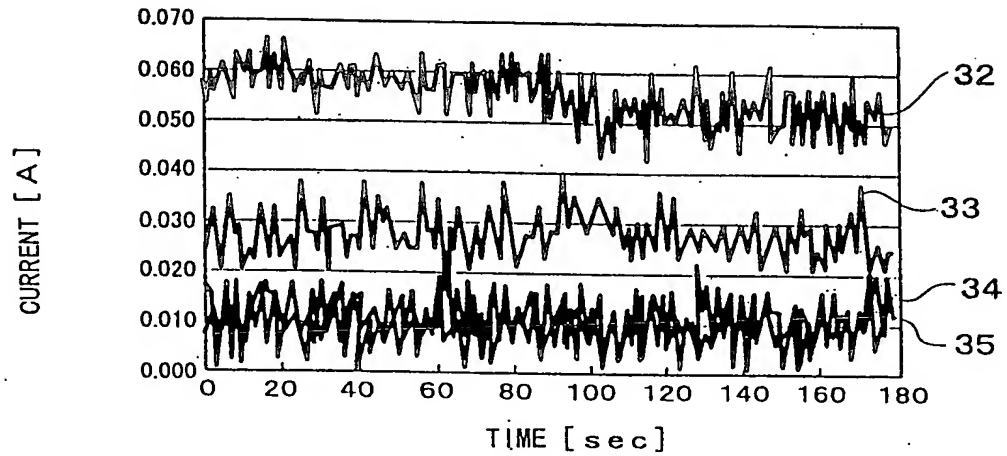
GRAPH (PART1) SHOWING CHANGES IN MEASURED DATA

FIG. 8



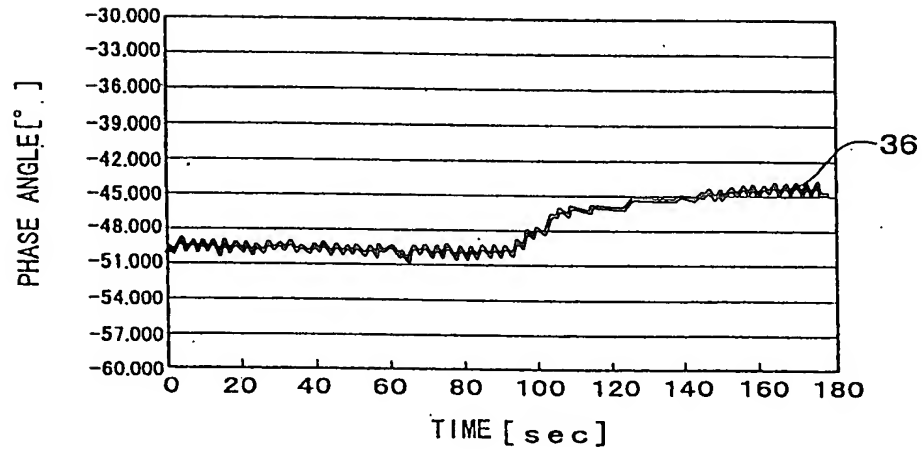
GRAPH (PART2) SHOWING CHANGES IN MEASURED DATA

FIG. 9



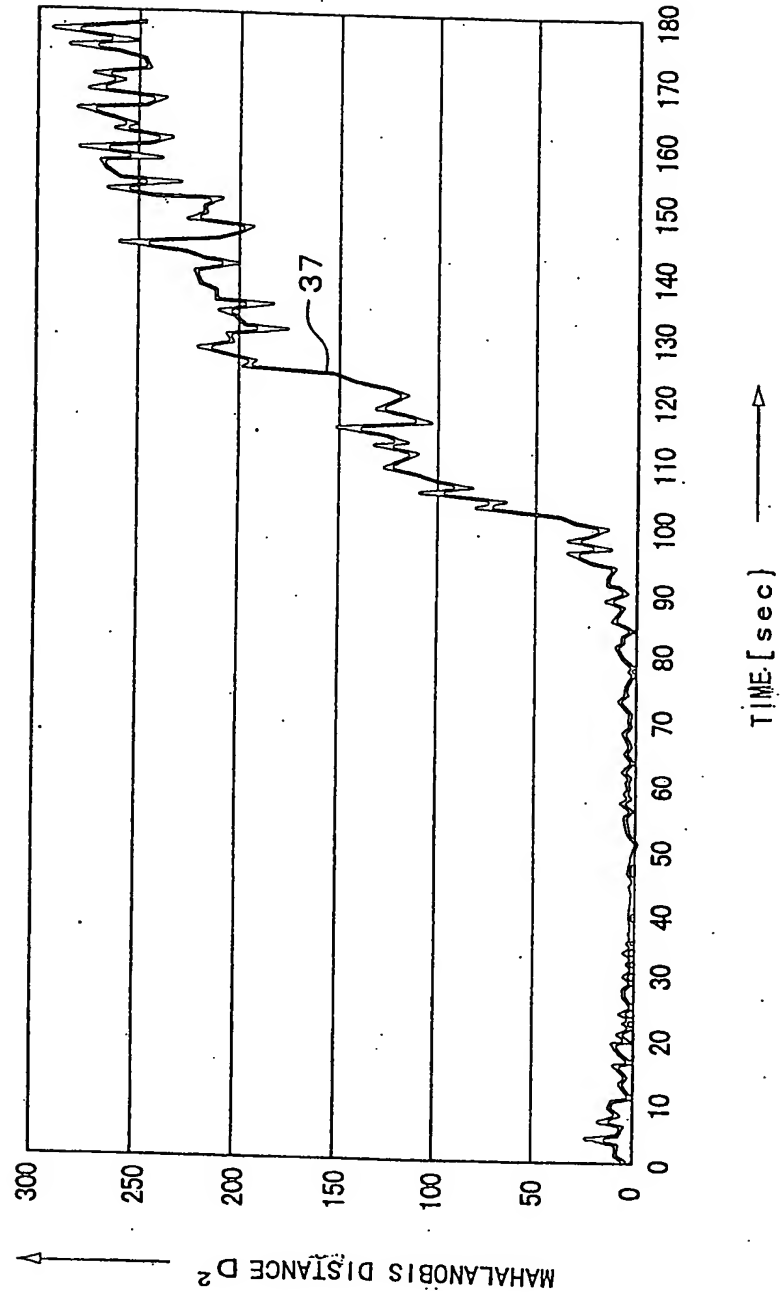
GRAPH (PART3) SHOWING CHANGES IN MEASURED DATA

FIG. 10



GRAPH (PART4) SHOWING CHANGES IN MEASURED DATA

FIG. 11



GRAPH SHOWING CHANGES IN MAHALANOBIS DISTANCE IN SECOND EMBODIMENT

FIG. 12

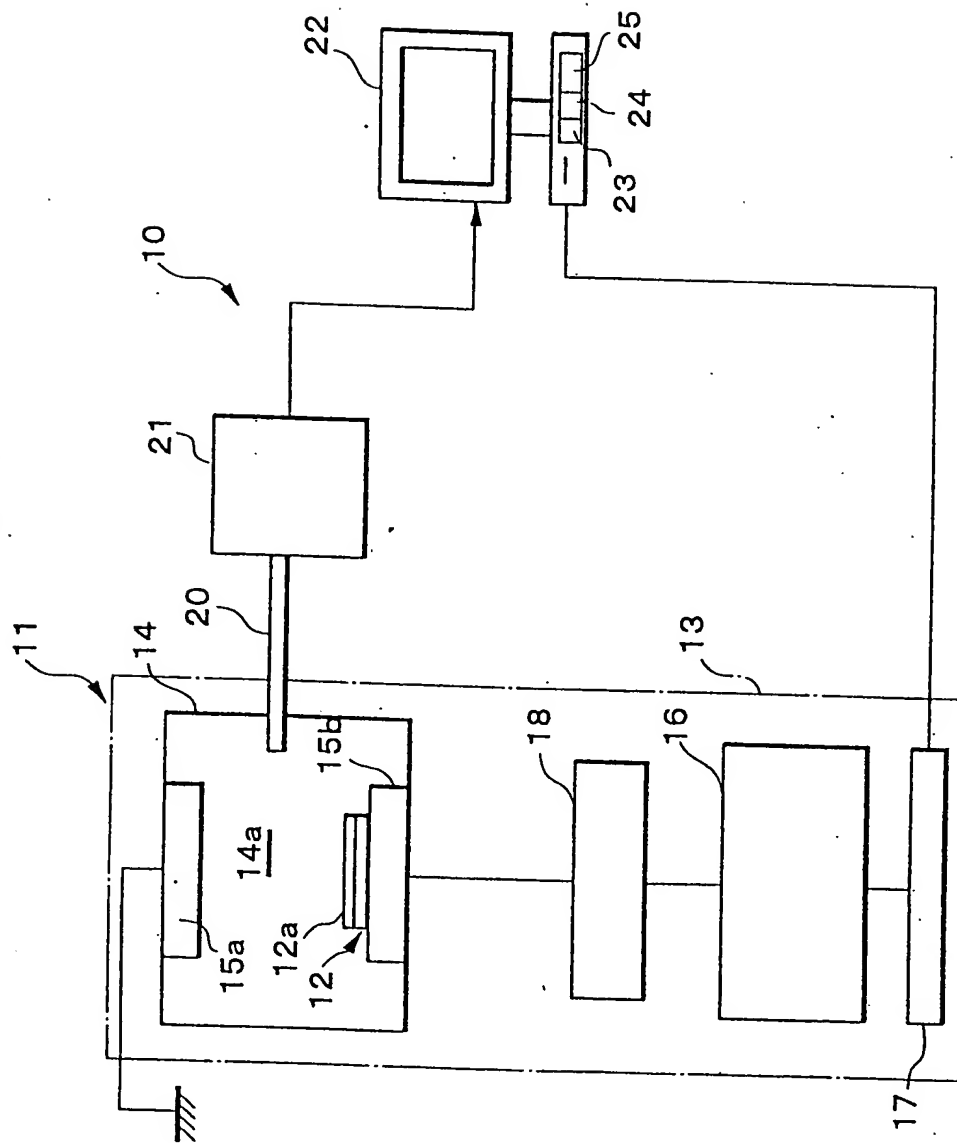
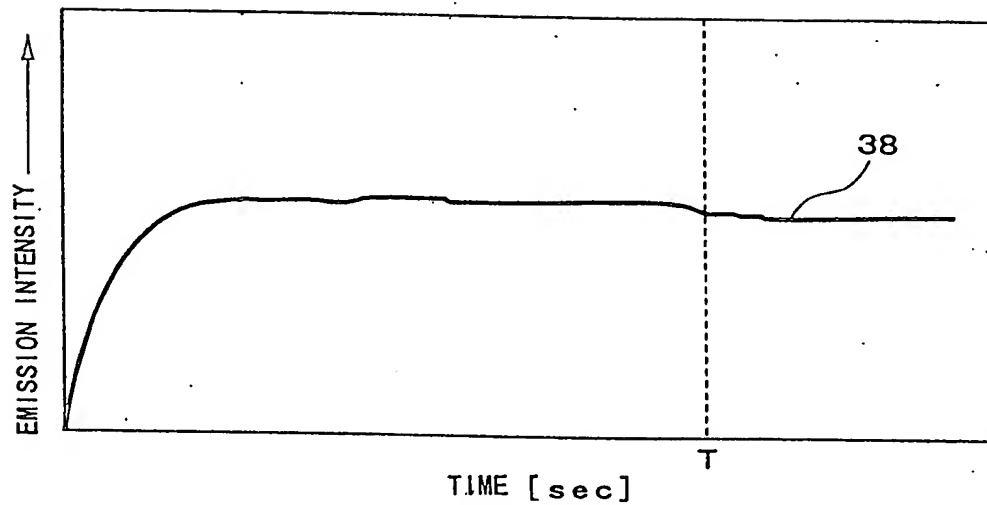


FIG. 13

	Time. 1	Time. 2	Time. 3	... Time. n
	$\lambda 1, \dots, \lambda 11$	$\lambda 1, \dots, \lambda 11$	$\lambda 1, \dots, \lambda 11$	$\dots \lambda 11$
1	$X1, \dots, X11$	$X12, \dots, X22$	$X23, \dots, X33$	$\dots Xnn$
2	$Y1, \dots, Y11$	$Y12, \dots, Y22$	$Y23, \dots, Y33$	$\dots Ynn$

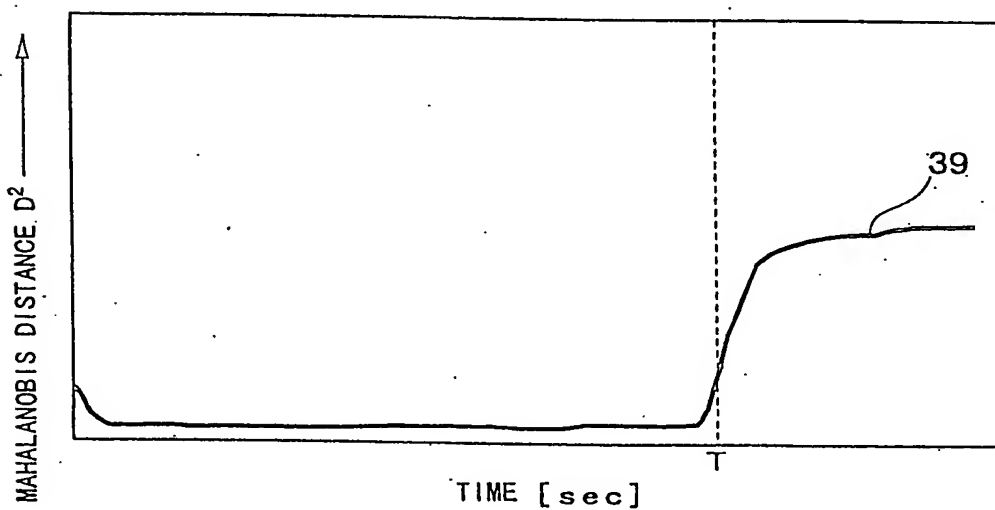
STANDARDIZED DATA IN THIRD EMBODIMENT

FIG. 14



GRAPH SHOWING CHANGES IN PLASMA EMISSION INTENSITY

FIG. 15



GRAPH SHOWING CHANGES IN MAHALANOBIS DISTANCE IN THIRD EMBODIMENT